

## BUTTON SUMMARY

RELEASE V

SEPTEMBER, 1984

This section contains a list of all buttons on the Velocity/Pressure Keyboard Unit and their uses. Note that the functions of some buttons are under development.

## TIMBRE/SEQUENCE STORAGE

Timbres and sequences are selected and stored with buttons in the upper fourth panel. The top row is used to select what type of information is to be recalled or stored (either TIMBRE LIBRARY, BANK, ENTRY, or SEQUENCE LIBRARY or SEQUENCE). The numbered buttons in the bottom row are used to perform the actual store or recall of a particular timbre, bank, library or sequence.

WARNING: Be sure to check which button (BANK, ENTRY, SEQUENCE) is lit when you use the numbered buttons. Otherwise you may lose the information in memory or write over the wrong information on the diskette.

### Selecting the Timbre Library, Bank, and Entry

- Timbres are grouped into up to 8 entries for each bank [and up to 8
- banks for each library. The libraries correspond to subcatalogs
- and alternate drives. See below for description of library
- assignments.]

TIMBRE LIBRARY (current version)	First select BANK or ENTRY. Press and hold button, press number 1-8.	Acts as old DRIVE SELECT; accesses alternate drive for system. Pressing LIBRARY for entries is only necessary with timbres with frames.
*TIMBRE LIBRARY	Press button, then number 1-8.	Selects library for timbre storage.
TIMBRE BANK	Press button, then number 1-8.	Selects and loads timbre bank into memory
TIMBRE ENTRY	Press button, then number 1-8.	Selects and activates timbre on keyboard.

---

\* Starred items are not yet implemented.

SPLIT	Press once, then press number 1-8. or TRACK 1-32.	Establishes split keyboard, with selected timbre on upper section.
	Press twice, then press number 1-8 or TRACK 1-32.	Establishes split keyboard, with selected timbre on lower section.
	Press once or twice, then press key, then press number 1-8.	Establishes split keyboard, with new split point.
	Press once, then key, then STOP.	Sets new split point with same timbres.
Future versions will have a feature for setting up a floating split point.		

#### Selecting the Sequence Library and Entry

- As with timbres, the sequences are grouped into up to 8 entries for
- each diskette [or library. Libraries are arranged in the same manner
- as above for timbres. See below for description of library
- assignments. The selected library for sequences may be different from
- the selected library for timbres.]

SEQUENCE LIBRARY (current version)	First select SEQUENCE, then press and hold button, press 1-8.	Acts as old DRIVE SELECT; accesses alternate drive for system.
*SEQUENCE LIBRARY	Press button, then number 1-8.	Selects library for sequence storage.
SEQUENCE ENTRY	Press button, then number 1-8.	Selects and recalls sequence to memory recorder.

## Storing and Protecting Timbres and Sequences

**WRITE** First select BANK, ENTRY, or SEQUENCE. Press and hold button, then press number 1-8. Writes the currently active bank, entry, or sequence to the specified location. NOTE: only timbres, banks and sequences may be copied in this way - libraries may not. (Combines functions of BANK OVERWRITE and ENTRY WRITE.)

NOTE: BE CAREFUL.

**\*PROTECT** Toggles the protection state of the current bank, entry, or sequence. If light is lit, bank, entry or sequence is write-protected. After setting protection state, WRITE timbre, bank, or sequence onto disk.

Libraries may not be write-protected.

In future releases, a password entered on the keyboard may be required to remove the write protect.

## \*How the Library Numbers Will Be Assigned

- Libraries 1, 2, and 3 are devices, while 4 through 8 are subcatalogs.

LIBRARY 1	Accesses the current user catalog on Winchesters, or F1 floppy disk drive on dual floppy-based systems
LIBRARY 2	Accesses the F0 floppy disk drive
LIBRARY 3	Accesses the top catalog of the Winchester
LIBRARY 4-8	Accesses subcatalogs called "LIBRARY4" through "LIBRARY8" on the Winchester disk.

Note: the default library will be F1, except for single-floppy operating system diskettes, which will default to library 2 (F0).

## TIMBRE PARAMETERS

### Selecting Partial and Frames

- Timbres are made up of from 1 to 4 independent partial timbres,
- where each partial may have a single waveform or a series
- of waveform frames.

PARTIAL TIMBRE 1-4	Press 1 or more buttons.	Selects partial for programming or soloing on keyboard. If button(s) are lit or blinking, selected partial timbre(s) can be programmed. If buttons are blinking, selected partial timbre(s) will be soloed on keyboard.
	Hold down 1 or more buttons, turn knob.	Selects frame(s) for programming on selected partial(s).
	Hold down 1 or more buttons, press START	Inserts new frame(s) after selected frame(s) on selected partial(s).
	Hold down 1 or more buttons, press STOP.	Deletes selected frame(s) on selected partial(s).

### Recalling Selected Partial (a four-step procedure)

PARTIAL TIMBRE 1-4	First load bank with desired timbre into memory.	Prepares for selective recall.
	Then press ENTRY.	Assigns correct function to buttons 1-8.
	Then hold down buttons 1-4.	Selects both which partial(s) will be recalled and where they will be copied to. The latter must be inactive before selective recall.
	Press button(s) 1-8.	Copies selected partial(s) in bank in memory to timbre on keyboard.

### Copying Partial Timbres and Frames

PARTIAL TIMBRE 1-4	Press BOUNCE, then press button 1-4, then another button 1-4.	Copies all settings from first selected partial onto second selected partial.
	Hold down button, dial number, press BOUNCE.	Selects frame to be bounced onto next inserted frame.

### VOLUME ENVELOPE Parameters

- The following volume envelope parameters apply to Frame 0 (zero) of
- the partial.

DELAY	Press button, turn knob.	Changes volume delay time. Range: 0 to 30.00 sec.
ATTACK	Press button, turn knob.	Changes volume attack time. Range: 0 to 15.00 sec.
INITIAL DECAY	Press button, turn knob.	Changes volume initial decay time. Range: 0 to 30.00 sec.
FINAL DECAY	Press button, turn knob.	Changes volume final decay time. Range: 0 to 30.00 sec.
PEAK	Press button, turn knob.	Changes volume peak level. Range: 0.0 to 100.0 dB.
SUSTAIN	Press button, turn knob.	Changes volume sustain level. Range: 0.0 to 100.0 dB.

### HARMONIC (FM) ENVELOPE Parameters

- The following harmonic (FM) envelope parameters apply to Frame 0
- (zero) of the partial.

DELAY	Press button, turn knob.	Changes FM delay time. Range: 0 to 30.00 sec.
ATTACK	Press button, turn knob.	Changes FM attack time. Range: 0 to 15.00 sec.
INITIAL DECAY	Press button, turn knob.	Changes FM initial decay time. Range: 0 to 30.00 sec.
FINAL DECAY	Press button, turn knob.	Changes FM final decay time. Range: 0 to 30.00 sec.
PEAK	Press button, turn knob.	Changes FM peak level. Range: 0.0 to 1000 arb.
SUSTAIN	Press button, turn knob.	Changes FM sustain level. Range: 0.0 to 1000 arb.



### Non Frame 0 Parameters

- The following functions change parameters that relate to the frame
- splicing process. When you have selected a frame other than the
- zero frame using the PARTIAL TIMBRE select buttons, the VOLUME and
- HARMONIC ENVELOPE buttons are assigned as follows:

VE DELAY	Press button, turn knob.	Adds delay to front of frame. Range: 0 to 30.00 sec. Default is 0.
VE ATTACK	Press button, turn knob.	Sets splice time between waveforms. Range: 0 to 20.00 sec. Default is 1000 milliseconds.
VE INITIAL DECAY	Press button, turn knob.	Sets splice type, where 0 produces a fully exponential splice and 1000 fully linear. Default is 500.
VE FINAL DECAY	Press button, turn knob.	Sets range for pitch random- ness in semitones. Range: 0.0 to 48.00 semitones. Set on one frame only.
VE PEAK	Press button, turn knob.	Sets frame peak level. Range: 0.0 (no volume) to 100.0 (full volume).
VE SUSTAIN	Press button, turn knob.	Changes partial timbre volume (same as PARTIAL VOLUME button).
*HE ATTACK	Press button, turn knob.	Sets overall scale factor for speed of frames. Range: .00 to 10.00 times programmed speed.
HE PEAK	Press button, turn knob.	Sets pitch offset for frame. The offset value is added to the pitch of the previous frame. Range: -48.00 to +48.00 semitones.
HE SUSTAIN	Press button, turn knob.	Sets loop starting frame. (set on last frame in loop). Range: 0 (no loop) to one less than end loop frame.

### Other Timbre Parameters

PARTIAL TUNING	Press button, turn knob, or repeatedly press button.	Changes tuning base for partial timbre. Range: 0.0 Hz to 1760 Hz. Or for constant tuning: -.1 to -999 Hz.
PARTIAL VOLUME	Press button, turn knob.	Changes overall volume for partial. Range: 0.0 (no volume) to 100.0 (full volume).
F.M. RATIO	Press button, turn knob.	Changes modulator to carrier frequency ratio. Range: 0.00 to 16.00 ratio. Or for constant modulator: -.1 to -999 Hz.

### Harmonic Control Section

- This section allows you to specify the waveform characteristics
- of the specified partials and frames. The waveform is described
- by the harmonic coefficients, which give the strength of a harmonic
- component, and the harmonic phases, which give the relative phase
- offsets. Select frame 0 to program the initial waveform. Select
- above zero frames to program the splicing waveforms.

*HARMONIC SELECT	Press button, turn knob, or repeatedly press button.	Selects harmonic group as 1-12, 13-24, 25-36, etc.
HARMONIC SELECT (current version)	Press button once. Press button twice.	Selects harmonic group 1-12. Selects harmonic group 13-24.
HARMONIC CONTROL buttons	Hold one or more buttons, and press HARMONIC SELECT.	Toggles HARMONIC CONTROL buttons between <u>lit</u> and <u>blinking</u> modes.
HARMONIC CONTROL buttons <u>lit</u>	Press one or more buttons, turn knob.	Changes the harmonic coefficient for selected harmonics. If button is released, new waveform will be calculated and played. Coefficient range: 0.0 to 100.0.
HARMONIC CONTROL buttons <u>blinking</u>	Press one or more buttons, turn knob.	Changes the phase value for selected harmonics. If button is released, new waveform will be calculated and played. Phase range: 0 to 63 for 0 to 360 degrees. Phase cannot be set on first harmonic of Frame 0.



## TIMBRE CONTROL

### Adding Vibrato

- This section allows you to specify the vibrato characteristics,
- such as wave, depth, and rate. Five different vibrato waveforms
- are built in, such as sine and ramp, which can be modified by
- three modifiers, such as invert and quantize.

WAVE	Press button, turn knob, or repeatedly press button.	Changes vibrato wave shape. Display will indicate name.
RATE	Press button, turn knob.	Changes vibrato rate. Range: 0.0 to 50.00 Hz.
DEPTH	Press button, turn knob.	Changes vibrato depth. Range: 0.0 to 24.00 semitones.
*MOD DEPTH	Press button, turn knob.	Changes vibrato depth of FM modulator channel only. Range: 0.0 to 24.00 semitones. If dialed below 0, displays special code indicating that MOD DEPTH will follow changes in DEPTH.
ATTACK/DECAY*	Press button, turn knob.	Changes attack or decay time of vibrato. Positive numbers (attack) 0 to 9999 milliseconds.  In future releases, negative numbers will indicate a decay of 0 to 9999 milliseconds.
INVERT	Press button.	Toggles invert modifier on or off. When lit, vibrato waveform is inverted around 0.
QUANTIZE	Press button.	Toggles quantize modifier on or off. When lit, vibrato waveform is quantized to scale intervals (semitones).
BIAS	Press button.	Toggles bias modifier on or off. When lit, vibrato waveform is biased to be keyboard pitch and above. If both BIAS and INVERT are lit, the vibrato is biased to keyboard pitch and below.

### Adding Stereo Panning Information

- This section controls panning if you have the stereo option. You
- can establish a static stereo image, or use one of several dynamic
- panning modes, which can be driven by keyboard effects or by
- automatic waveforms.

WAVE	Press button, turn knob, or repeatedly press button.	Selects stereo panning mode or waveform. Display indicates name.
RATE	Press button, turn knob.	Changes panning rate. Range: 0.0 to 6.00 Hz. Applicable only in automatic pan modes.
DEPTH	Press button, turn knob.	Changes stereo panning depth. Range: 0 to 50 panning units. Applicable only in dynamic pan modes.
PAN	Press button, turn knob.	Changes panning center position. Range: -50 (full left) to +50 (full right).
	Press button twice.	Resets panning center to zero (audio center).

### Adding Amplitude Modulation

The stereo panning controls can be used to add amplitude modulation instead of automatic panning. To select amplitude modulation, use waves 21 through 24. The rate and depth then control the modulation.

### Adding Portamento

- Portamento can be added to any partial. The mode and rate may be
- specified. Portamento can also be activated by use of a footswitch.

ON/OFF	Press button.	Toggles portamento on/off state. When lit, portamento is on.
MODE	Press button.	Toggles portamento mode. When lit, mode is logarithmic, When not lit, mode is linear.
RATE	Press button, turn knob.	Changes portamento rate. Range: 0.000 to 1.000 where 0.0 is very slow and 1.0 is instantaneous. In future releases, you will be able to specify the time for the slur, instead of the rate.

### Adding Partial Chorus

- The unlabeled button in the TIMBRE CONTROL section is used for Partial
- Chorus.

(unlabeled)	Press button, turn knob.	Establishes and tunes chorus effect for selected partial(s) only. Range: 0.000 to 10.000 arb. A setting of 1.000 results in no chorus.
	Press button while lit.	Removes chorus effect from selected partials by resetting parameter to 1.000.

## KEYBOARD CONTROL

- The keyboard control section of the panel allows you to describe
- how the system will respond to actions on the keyboard, such as
- timbre variations according to dynamics, polyphony mode, and
- to select special effects such as automatic repeat and arpeggiate.

KEYBOARD ENVELOPE: LEFT	Hold down button, press one key or two. Can also dial numbers outside keyboard range.	Sets the lower end of keyboard range for a partial. If one key is pressed, then left end- point of range is defined. If two keys are pressed, then an endpoint and a lower fade-out width is defined.
KEYBOARD ENVELOPE: RIGHT	Hold down button, press one key or two. Can also dial numbers outside keyboard range.	Sets the upper end of keyboard range for a partial. If one key is pressed, then right end- point of range is defined. If two keys are pressed, then an endpoint and a upper fade-out width is defined.
DYNAMIC ENVELOPE: LOW	Press button, turn button, turn knob to step through levels 1 - 8.	Sets lowest dynamic level at which partial will be played.
DYNAMIC ENVELOPE: HIGH	Press button, turn button, turn knob to step through levels 1 - 8.	Sets highest dynamic level at which partial will be played.
REPEAT ON/OFF	Press button.	Toggles repeat mode on keyboard. When lit, notes are automatically repeated.
ARPEGGIATE ON/OFF	Press button.	Toggles arpeggiate mode on keyboard. When lit, chords will be automatically arpeggiated.
RATE	Press button, turn knob.	Changes repeat and/or arpeggiate rate. Range: 0.00 to 100.0 Hz.
CHORUS	Press button, turn knob.	Establishes and tunes overall chorus effect. Range: 0.000 to 10.000 arb. A setting of 1.000 results in no chorus.
	Press button while lit.	Removes overall chorus effect by resetting parameter to 1.000.

POLYPHONY MODE	Press button, turn knob.	Changes polyphony number. Specifies number of notes that timbre may play.
*POLYPHONY MODE	Hold down button, turn knob.	Changes polyphony mode. Display will step through available polyphony modes.
TIMBRE NAME	Hold down button, turn knob.	Selects letter of name to to changed. Selected letter will flash.
	Press button, turn knob.	Changes selected letter of name. Complete range of printable characters is available.
Note: you can also type letters on the terminal keyboard to update the timbre name.		
DECAY ADJUST	Press button, turn knob.	Changes final decay on lower notes. Range: 0.000 for fixed decays, to 1.000 for decays which double each octave.
HARMONIC ADJUST	Press button, turn knob.	Changes harmonic brilliance on upper vs. lower notes. Active only when FM is used. Range: -30 for increase on lower notes, to +30 for increase on upper notes.



## REAL-TIME EFFECTS

- The Real-Time Effects panel allows you to determine the actions of the various expression inputs. You can patch any of the 8 inputs to any of the 24 controllable parameters on any of the four partials.
- The controllable parameters are indicated by the white dots next to the parameter buttons.
- 
- Each time you press an expression input button, it will light up.
- At the same time, the buttons of the partials to which the input is patched will light up. For convenience all four are normally patched to all inputs and will light up.
- There are three states for the 24 parameter buttons:
- LIT
  - Expression input is patched to parameter in normal mode so that the greater the input value, the closer to full programmed value for the parameter.
- BLINKING
  - Expression input is patched to parameter in inverted mode so that the greater the input value, the further from full programmed value for the parameter.
- FLICKERING (a brief flash, once per second).
- Expression input can be patched to parameter.

### EXPRESSION INPUT buttons

VELOCITY	Press button, then press buttons of partials and parameters.	Sets up patching of velocity input.
PRESSURE	Press button, then press buttons of partials and parameters.	Sets up patching of pressure input.
PEDAL1	Press button, then press buttons of partials and parameters.	Sets up patching of pedal 1 input.
PEDAL2	Press button, then press buttons of partials and parameters.	Sets up patching of pedal 2 input.

MOD WHEEL	Press button, then press buttons of partials and parameters.	Sets up patching of right-most control wheel input.
RIBBON	Press button, then press buttons of partials and parameters.	Sets up patching of ribbon input.
KEYBOARD C.V.	Press button, then press buttons of partials and parameters.	Sets up patching of keyboard control voltage input.
	Hold down button, press two keys.	Sets lower and upper limits for range of keyboard control voltage.
BREATH CONTROLLER	Press button, then press buttons of partials and parameters.	Sets up patching of breath controller input.
*VELOCITY SENSITIVITY	Press button, turn knob.	Changes sensitivity parameter. Range: 0 (no sensitivity) to 100 (full range of sensitivity).

#### Establishing and Selecting Real-Time Effects Modes

*MEMORIZE	—	To be defined.
*RECORDER	—	To be defined.
*OVERWRITE	—	To be defined.
CLEAR		Clears real-time effect assignments.
	Hold button, press expression button.	Clears all RTE patching from that input.
	Hold button, press partial 1-4.	Clears all RTE patching to the partial(s).
	Hold button, press flickering parameter button.	Clears all RTE patching to that parameter.
	Hold button, run a finger across all 8 expression buttons.	Clears all patchings.

## RECORDER CONTROL

- The 32-track\*\* digital memory recorder is controlled from the center
- two panels of the keyboard. It has provisions for entering, editing,
- and performing a 32-track sequence.

START	Press once.	Starts playback at first click.
	Press twice.	Starts playback at first note.
STOP	Press once.	Stops recording, playback, or other record operation in progress.
RECORD	Press once.	Starts recording on blinking track. If none are soloed, system will select first empty track.
CONTINUE	Press once.	Continues playback from point in mid-sequence. Also arms the system for various loops and start loop points.
REWIND	Press once.	Plays back in reverse to time 0.
	*Press twice.	Plays back in reverse to next defined mark.
F.F.	Press once.	Plays forward, fast.
	*Press twice.	Plays forward, fast, to next defined mark.
ERASE	Press twice	Erases sequence in memory recorder.
	or select tracks, then press ERASE twice.	Erases selected tracks in memory recorder.
*MARK	—	To be defined.
*START LOOP	Press button at time of loop start.	Defines the starting time of a loop segment.

---

\*\* 16 only in this first release.

END LOOP	Press button at time of loop end.	Defines the ending time of a loop segment.
	Note: if track button held, defines independent loop for track. If not, defines overall loop.	
TRANPOSE	Press button, press key.	Transposes sequence based on interval of key to middle C.
		If track is soloed, transposes only track.
	Press button again.	Takes keyboard out of transpose mode.
SPEED	Press button, turn knob.	Changes recorder speed. Range: .00 to 10.00 times recording speed.
CLICK RATE	Press button once, turn knob.	Changes click rate. Range: 6.0 to 2400 clicks per min.
	Press button twice, turn knob.	Changes click period. Range: 25 to 9995 msec.
	Press button thrice.	Turns off click track.
*SMPTE MODE	---	To be defined.
EXT SYNC MODE	Press repeatedly.	Selects external synchronization mode. Available modes are:
	Unlit	Needs no external sync, syncs to internal clock.
	Lit	50 Hz signal synchronization
	Blinking	Beat (or sync pulse) synchronization
*CHAIN	---	To be defined.
*INSERT	---	To be defined.
*DELETE	---	To be defined.
SMT	Press button, then TRACK button, then either:	Replaces timbre on selected track with:
	SKT or	keyboard timbre, or
	TRACK button or	timbre from track, or
	ENTRY, then numbered button.	timbre from bank.

SKT	Press button, then TRACK button.	Moves timbre from selected track to keyboard.
BOUNCE (lit)	Press button, then original TRACK button once, then destination TRACK button.	Performs erasing bounce.
	Press button, then original TRACK button twice, then destination TRACK button	Performs non-erasing bounce
BOUNCE (currently)	Press button twice, so that it blinks.	Places recorder in justified mode. All notes and loops will be justified to click.
	Hold button, turn knob.	Sets click rate multiplier to justify to fractions of a click.
*JUSTIFY	Press button twice, so that it blinks.	Places recorder in justified mode. All notes and loops will be justified to click.
	Hold button, turn knob.	Sets click rate multiplier to justify to fractions of a click.
*SEQUENCE NAME	Press button, turn knob while holding button.	Selects letter of name to be changed. Selected letter will flash.
	Press button, turn knob while not holding button.	Changes selected letter of name. Complete range of printable chars is available.
 <u>Track Mixing Controls</u>		
*TRACK VOLUME	—	To be defined.
*TRACK PAN	—	To be defined.
*TRACK ROUTING	—	To be defined. (will require multi-channel output)



## Tuning Controls

OVERALL TUNING	Press button, turn knob.	Changes overall pitch in .1 Hz increments. Range: 0.0 to 1760 Hz.
	Or repeatedly press button.	Makes octave jumps in tuning.
OCTAVE RATIO	Press button, turn knob.	Changes octave ratio. Range: 0.000 to 4.000
	Press button twice.	Resets octave ratio to normal scale.
SCALE ADJUST: PITCH CLASS (currently)	Press button; light it.	Assigns scale adjust function to the HARMONIC CONTROL buttons.
SCALE ADJUST: * PITCH CLASS	Hold button, press key, then turn knob.	Changes the tuning of all keys of that pitch class. Range: 261.6 to 523.0 Hz.
SCALE ADJUST: * KEY ONLY	Hold button, press key, then turn knob.	Changes the tuning of selected key only. Range: 0.0 to 1760.0 Hz.
SCALE RESET	Press twice.	Restores tempered tuning for all pitches.
	Press once.	Activates knob-controlled tone bend.
	Hold down button and turn knob.	Changes pitch bend depth for all pitch bend devices (knob, expression inputs, pitch bend wheel).

Getting On-line Information and Help

INFO	Press button, then make selection.	Shows status of recorder, partials, or other controls. Can also be used to get on-line help.
------	---------------------------------------	---